

**CLAIMS**

1. An optical fiber pumped through the cladding, including:
  - a core (2, 12) having an optical index  $n_1$ ,
  - around the core, a first cladding (3, 15) having an index  $n_2$  lower than  $n_1$ , and
  - around the first cladding, a second cladding (4, 9, 14) having an index  $n_3$  lower than  $n_2$ ,
 characterized in that the interface between the first cladding (3, 13) and the second cladding (4, 9, 14) has a substantially polygonal cross section.
2. An optical fiber according to claim 1, characterized in that the core (2, 12) consists of doped silica glass, the first cladding (3, 13) consists of undoped or very weakly doped silica glass, and the second cladding (4, 9, 14) consists of silica glass doped negatively, for example with fluorine or boron.
3. An optical fiber according to claim 1, characterized in that the core (2, 12) consists of strongly doped silica glass, the first cladding (3, 13) consists of silica glass doped positively, for example with germanium, and the second cladding (4, 9, 14) consists of undoped silica glass.
4. An optical fiber according to any of claims 1 to 3, characterized in that it includes a low-index polymer coating (20) around its second cladding and in that the interface between the second cladding and said coating has a substantially polygonal or multilobed cross section.
5. A method of fabricating an optical fiber pumped through the cladding, characterized in that it consists in executing the following steps:
  - placing around a central optical preform (1, 11) including a core (2, 12) having an index  $n_1$  surrounded by a first cladding (3, 13) having an index  $n_2$  lower than  $n_1$ , a plurality of rods (4, 9, 15) having an index  $n_3$  lower than  $n_2$ , and
  - drawing the optical preform and the rods to obtain an optical fiber including a core and two claddings.
6. A method according to claim 5, characterized in that optical preforms (7) with claddings having an index  $n_3$  are used as the bars placed around the central optical preform.
7. A method according to either claim 5 or claim 6, characterized in that

the central optical preform (11) is, after drawing, an optical fiber pumped through the cladding consisting of a core having an index  $n_1$ , a first cylindrical cladding of circular section surrounding the core and having an index  $n_2$  lower than  $n_1$ , and a second cylindrical cladding of circular section surrounding the first cladding and having an index  $n_3$ .

- 5 8. A method according to any of claims 5 to 7, characterized in that the central optical preform and the rods having an index  $n_3$  are placed in a sleeve (5, 16) within which the atmosphere is controlled for drawing by establishing a vacuum or a partial pressure of neutral gases such as helium or reagents such as  $C_2F_6$ .
- 10 9. A method according to claim 8, characterized in that the sleeve is made of silica whose index has been reduced by appropriate doping, for example with fluorine or boron.
- 15 10. A method according to any of claims 5 to 7, characterized in that the interstices between the rods (15) having an index  $n_3$  are filled and the atmosphere in the volume delimited by the rods is controlled for drawing by establishing a vacuum or a partial pressure of neutral gases such as helium or reagents such as  $C_2F_6$ .
- 20 11. A method according to any of claims 5 to 10, characterized in that the second cladding is enveloped in a low-index polymer coating (20).